

**Amendment and Response**

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For: CRYSTALLIZATION AND STRUCTURE DETERMINATION OF STAPHYLOCOCCUS AUREUS NAD SYNTHETASE

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**Amendments to the Specification**

Please replace the paragraph beginning at page 9, line 25, with the following amended paragraph.

In another aspect, the present invention provides a crystal of *S. aureus* NAD synthetase. Preferably the crystal has the monoclinic trigonal space group symmetry  $P2_1$ . Preferably the crystal includes a unit cell having dimensions of a, b, and c; wherein a is about 40Å to about 60Å, b is about 90Å to about 120Å, and c is about 80Å to about 110Å; and wherein  $\alpha = \gamma = 90^\circ$  and  $\beta$  is about 80° to about 120°. Preferably the crystal includes atoms arranged in a spatial relationship represented by the structure coordinates listed in Table 1. Preferably the crystal of has the amino acid sequence SEQ ID NO:1. Optionally at least one methionine may be replaced with selenomethionine.

Please replace the paragraph beginning at page 16, line 17, with the following amended paragraph.

Applicants have produced crystals comprising *S. aureus* NAD synthetase (and substrate or inhibitor), which are suitable for x-ray crystallographic analysis. Preferably, the crystals have one dimension of 0.15-0.8 mm, and more preferably dimensions of 0.15-0.8 mm x 0.2 mm x 0.05-0.1 mm. The three-dimensional structure of *S. aureus* NAD synthetase or *S. aureus* NAD synthetase/ligand complex was solved using high resolution x-ray crystallography. Preferably, the crystal has the monoclinic trigonal space group symmetry  $P2_1$ . More preferably, the crystal comprises unit cells, each unit cell having dimensions of a, b, and c; wherein a is about 48 Å to about 53 Å, b is about 102 Å to about 113 Å, and c is about 87 Å to about 97 Å; and wherein  $\alpha = \gamma = 90^\circ$ ,  $\beta$  is about 80° to about 120°. The crystallized enzyme is a dimer and has two dimers in the asymmetric unit. Accordingly, one embodiment of the invention provides an *S. aureus* NAD synthetase or *S. aureus* NAD synthetase/ligand crystal.